# CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 08/16/2024 FILE REF: NA

TO: Ben Hartenbower, Limit Calculator; Katie Jo Jerzak, Compliance Engineer

FROM: Kimberly Kuber, Stream Biologist; Kristi Minahan, Water Quality Standards; Diane Figiel, Limit Calculator Coordinator

SUBJECT: Chaseburg WWTP, Coon Creek (WBIC 1643500), Vernon County

**Overview of issue**

In preparation for reissuance of the Chaseburg WWTP permit, staff were requested to do a site visit to determine the appropriate stream classifications for the receiving waters. Chaseburg WWTP is a continuous discharger, with an annual average design flow of 0.067 MGD (0.104 cfs). The location has a fair amount of dilution, with a 7Q10 of 34 cfs and 7Q2 of 39 cfs, so many limits were not triggered (such as ammonia or phosphorus) in the 2019 permit memo.

The immediate receiving water is Coon Creek (WBIC 1643500, Segment 1), which eventually flows to the Mississippi River. The facility has been getting limits based on Warmwater, as it is not listed in NR 104 as Limited Aquatic Life (LAL) or Limited Forage Fish (LFF) and the discharge location was not listed as a trout water in the 1980 Trout Book. However, it is currently listed as a Trout Class III from CTH K (just upstream of the facility) down to the Mississippi River. This portion was designated as a Trout Class III water in 2002 (Bradd Sims, personal communication). Farther upstream (above CTH K) was Trout Class III in the 1980 Trout Book, but is currently Trout Class II.

This memo documents the coldwater status of Coon Creek based on existing fisheries data. With a change to a coldwater designated use, we recommend that the permit program evaluate whether there is reasonable potential to exceed coldwater criteria; however, in this case it is expected that new limits would not be triggered due to the level of dilution available and the fact that Rainbow Trout are not present.

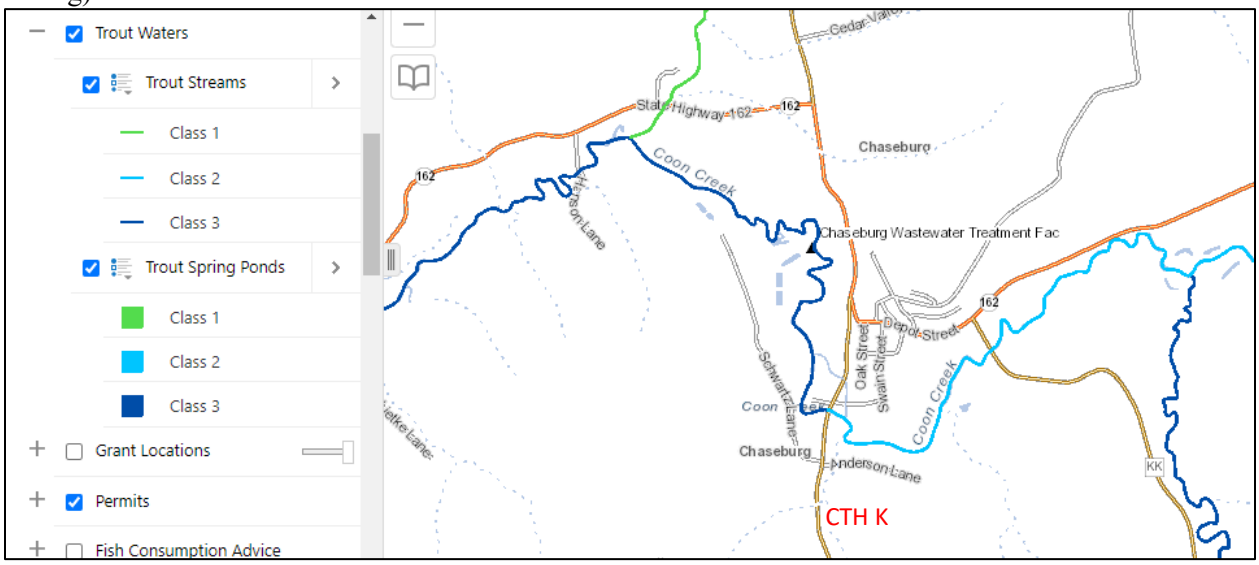
**Summary of recommendations**

- **Segment 1: Coon Creek (WBIC 1643500) from below outfall to Mississippi River**
  - *Codified designated use:* This supports a coldwater community and is listed as a Trout Class III and therefore meets the definition for Coldwater designated use. (Note that beginning ~.75 miles above the outfall, upstream of CTH K, is currently Class II Trout. It was previously in the 1980 Trout Book as Class III above CTH K but not listed as a trout water below CTH K). It is not listed in code as LAL or LFF.
  - *Classification used for previous permit issuance:* In 2005 the permit stated that Coon Creek was Trout Class III and stated that limits were consistent with Coldwater. However, starting in 2008 (to present) the permit listed the creek as Warmwater, but did not change the limits (in this case, warmwater and coldwater result in equivalent limits due to the amount of dilution available).
  - *Previous stream class recommendations:* There are no 2003 stream class recommendations for the segment containing the discharge and downstream. However, there were 2003 recommendations proposing Coldwater for "Coon Creek in Vernon Co. between Hwy K and Hwy G" (upstream from Hwy K)
  - *Modeled Natural Community:* Cool-Warm Mainstem
  - *New recommended Natural Community and Designated Use:* Cold-Transition Mainstem NC and Coldwater DU

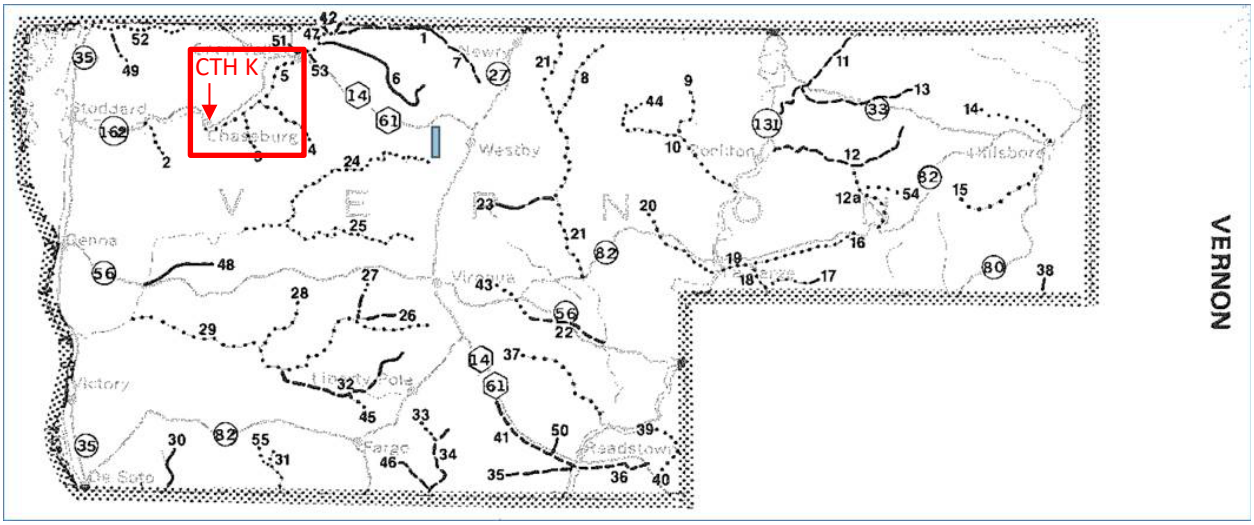
- **Segment 2: Mississippi River**
  - *Codified designated use:* Warmwater
  - *Classification used for previous permit issuance:* Warmwater
  - *Previous stream class recommendations:* None
  - *Modeled Natural Community:* Warmwater Large River
  - *New recommended NC & DU:* NA

**Site overview maps**

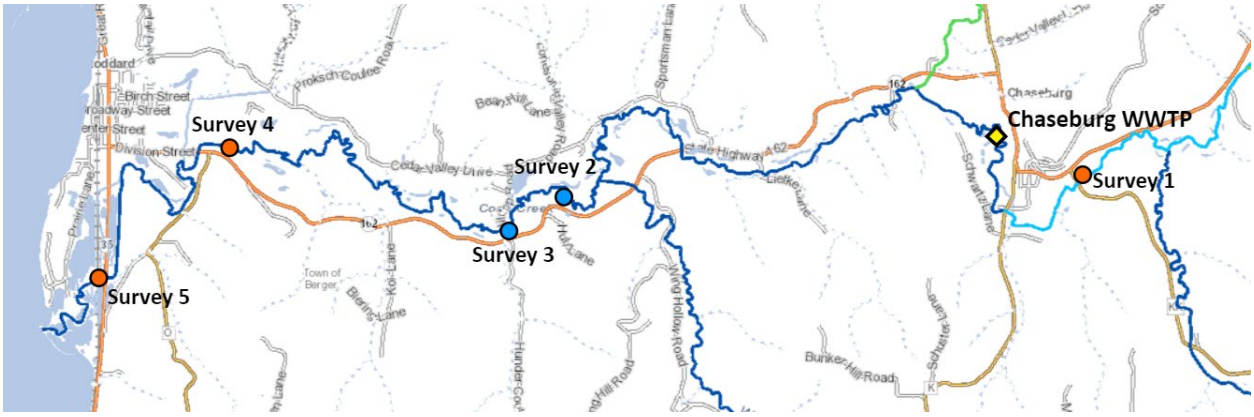
Map 1. Map from Water Condition Viewer showing current Trout Class segments (see legend for color coding).




Map 2. Historic info: The 1980 Trout Book listing does not list the segment containing the outfall as a trout water. However, it does list Class III "From CTH K bridge upstream" for 13 miles. The 1980 Class III portion is shown as a dotted line marked "5", indicated in the red box. The CTH K crossing is also indicated in red.



Map 3. Locations of existing fish surveys previously conducted on Coon Creek. Blue dots indicate surveys that were conducted using a stream tow barge. Orange dots indicate surveys conducted using a miniboom electrofishing boat. The Chaseburg WWTP is marked in a yellow diamond. Stream lines indicate Classified Trout Water; green is Class I, light blue is Class II, dark blue is Class III.




**Fish survey results**

Multiple surveys have been conducted by WDNR fisheries management and fisheries research staff on Coon Creek (WBIC 1643500) from 2003 to 2024.

- Survey 1 was conducted on August 9, 2004 upstream of the Chaseburg Wastewater Treatment Plant outfall within the segment that is Class II trout water, using a miniboom electrofishing boat. Brown Trout, a coldwater species, dominated the fish assemblage at this location and sizes ranged from 5.0 to 18.4 inches (Table 2). White suckers were common and Smallmouth Bass, Shorthead Redhorse, Common Carp and Fantail Darter were present. Due to the method of collection, neither a natural community verification nor an Index of Biotic Integrity (IBI) could be completed at this site, but the presence of multiple year classes of Brown Trout and the abundance of coldwater and transitional species at this location indicate a cool-cold transitional mainstem.
- Survey 2 was conducted on Coon Creek approximately 4 miles downstream of the Chaseburg WWTP using stream tow barge electrofishing gear and took place on August 5, 2003. Brown Trout, a coldwater species, were the most abundant species at this site (Table 3). Transitional species were also common and included White Sucker, Johnny Darter, and Longnose Dace. A single individual of Shorthead Redhorse and Spotfin Shiner, both warmwater species, were captured at this site. The natural community verifies as a cold transition mainstem and therefore, the cool-cold IBI was applied. It received a cool-cold IBI score of 80, rating Excellent.
- Survey 3 was conducted on Coon Creek approximately 4.6 miles downstream of the Chaseburg WWTP using stream tow barge electrofishing gear and took place on August 5, 2003. Brown Trout, a coldwater species, were the most abundant species at this site (Table 4). A mix of three transitional and three warmwater species were present, but only a few individuals of each were captured. The natural community verifies as a cold transition mainstem and therefore, the cool-cold Index of Biotic Integrity (IBI) was applied. It received a cool-cold IBI score of 100, rating Excellent.
- Survey 4 was conducted on Coon Creek near the intersection of STH 162 and CTH O using a miniboom electrofishing boat and took place on August 5, 2004. The most common species captured were Spotfin Shiner and Shorthead Redhorse, both warmwater species, followed by Brown Trout and White Sucker, which were also common (Table 5). Due to the method of collection, neither a natural community verification nor an IBI could be completed for this

survey. The presence of Brown Trout at this location, indicates that the temperature regime continues to be suitable for trout in Coon Creek.

- Survey 5 was conducted as part of a stocking evaluation near the mouth of Coon Creek before it flows into the Mississippi River on May 1, 2024, using a miniboom electrofishing boat. Brown Trout were the most common species captured and they ranged in size from 6.6 to 21.5 inches (Table 6). This indicates that multiple year classes of Brown Trout were inhabiting Coon Creek at this location at the time of the survey. Warmwater species common to large river systems were present at this site and are expected in the lower end of Coon Creek due to the proximity to the Mississippi River. Transitional species including Northern Hog Sucker and White Sucker were also present in this survey but in low abundances. Due to the method of collection, neither a natural community verification nor an IBI could be completed for this survey. This survey does indicate the Brown Trout at various stages in their life histories are utilizing Coon Creek.

Table 1. Locations of fish surveys conducted on Coon Creek between 2003 and 2024. Numbers in table correspond to survey locations in Map 3.

| Survey # on Map | SWIMS Station ID | Location Description | Survey Year | Gear Used |
|---|---|---|---|---|
| 1 | 10011503 | Upstream of CTH KK | 2004 | Miniboom |
| 2 | 10010387 | Approx. 1350 meters upstream of Hilltop Road Crossing | 2003 | Stream Tow Barge |
| 3 | 10010388 | Approx. 50 meters upstream of Hilltop Road Crossing | 2003 | Stream Tow Barge |
| 4 | 10011501 | Upstream STH 162 | 2004 | Miniboom |
| 5 | 10011502 | Near Confluence with Mississippi River | 2024 | Miniboom |

Table 2. Results of fisheries survey (Survey 1) conducted on 08/09/2004 by fisheries management staff and includes temperature, size, and tolerance guild assignments for each species.

| Species Name | Count | Thermal Guild | Stream Size Guild | Tolerance Guild |
|---|---|---|---|---|
| BROWN TROUT | 93 | Coldwater | Medium | Intermediate |
| COMMON CARP | 1 | Warmwater | Large | Tolerant |
| FANTAIL DARTER | 1 | Warmwater | Small | Intermediate |
| SHORTHEAD REDHORSE | 3 | Warmwater | Large | Intermediate |
| SMALLMOUTH BASS | 1 | Warmwater | Large | Intolerant |
| WHITE SUCKER | 47 | Transitional | Medium | Tolerant |

Table 3. Results of fisheries survey (Survey 2) conducted on 08/05/2003 by fisheries research staff and includes temperature, size, and tolerance guild assignments for each species.

| Species | Count | Thermal Guild | Stream Size Guild | Tolerance Guild |
|---|---|---|---|---|
| BROWN TROUT | 19 | Coldwater | Medium | Intermediate |
| JOHNNY DARTER | 2 | Transitional | Medium | Intermediate |
| LONGNOSE DACE | 8 | Transitional | Medium | Intermediate |
| SHORTHEAD REDHORSE | 1 | Warmwater | Large | Intermediate |
| SPOTFIN SHINER | 1 | Warmwater | Large | Intermediate |
| WHITE SUCKER | 10 | Transitional | Medium | Tolerant |

Table 4. Results of fisheries survey (Survey 3) conducted on 08/05/2003 by fisheries research staff and includes temperature, size, and tolerance guild assignments for each species.

| Species | Count | Thermal Guild | Stream Size Guild | Tolerance Guild |
|---|---|---|---|---|
| BROWN TROUT | 16 | Coldwater | Medium | Intermediate |
| CREEK CHUB | 1 | Transitional | Small | Tolerant |
| JOHNNY DARTER | 1 | Transitional | Medium | Intermediate |
| ROCK BASS | 1 | Warmwater | Large | Intolerant |
| SHORTHEAD REDHORSE | 2 | Warmwater | Large | Intermediate |
| SMALLMOUTH BASS | 1 | Warmwater | Large | Intolerant |
| WHITE SUCKER | 3 | Transitional | Medium | Tolerant |

Table 5. Results of fisheries survey (Survey 4) conducted on 08/05/2004 by fisheries management staff and includes temperature, size, and tolerance guild assignments for each species.

| Species Name | Count | Thermal Guild | Stream Size Guild | Tolerance Guild |
|---|---|---|---|---|
| BROWN TROUT | 13 | Coldwater | Medium | Intermediate |
| BULLHEAD MINNOW | 5 | Warmwater | Large | Intermediate |
| CENTRAL MUDMINNOW | 2 | Transitional | Small | Tolerant |
| FATHEAD MINNOW | 1 | Warmwater | Small | Tolerant |
| GOLDEN REDHORSE | 3 | Warmwater | Medium | Intermediate |
| ROCK BASS | 1 | Warmwater | Large | Intolerant |
| SAUGER | 4 | Warmwater | Large | Intermediate |
| SHORTHEAD REDHORSE | 14 | Warmwater | Large | Intermediate |
| SILVER REDHORSE | 4 | Warmwater | Large | Intermediate |
| SMALLMOUTH BASS | 2 | Warmwater | Large | Intolerant |
| SPOTFIN SHINER | 34 | Warmwater | Large | Intermediate |
| WALLEYE | 5 | Transitional | Large | Intermediate |
| WHITE SUCKER | 11 | Transitional | Medium | Tolerant |

Table 6. Results of fisheries survey (Survey 5) conducted on 05/01/2024 by fisheries management staff and includes temperature, size, and tolerance guild assignments for each species.

| Species Name | Count | Thermal Guild | Stream Size Guild | Tolerance Guild |
|---|---|---|---|---|
| BLUEGILL | 7 | Warmwater | Large | Intermediate |
| BOWFIN | 1 | Warmwater | Large | Intermediate |
| BROWN TROUT | 39 | Coldwater | Medium | Intermediate |
| COMMON CARP | 7 | Warmwater | Large | Tolerant |
| FRESHWATER DRUM | 2 | Warmwater | Large | Intermediate |
| GREEN SUNFISH | 1 | Warmwater | Small | Tolerant |
| LARGEMOUTH BASS | 4 | Warmwater | Large | Intermediate |
| NORTHERN HOG SUCKER | 1 | Transitional | Medium | Intolerant |
| PUMPKINSEED | 1 | Warmwater | Medium | Intermediate |
| QUILLBACK | 2 | Warmwater | Large | Intermediate |
| SHORTHEAD REDHORSE | 3 | Warmwater | Large | Intermediate |
| SMALLMOUTH BASS | 1 | Warmwater | Large | Intolerant |
| SMALLMOUTH BUFFALO | 6 | Warmwater | Large | Intermediate |
| WHITE SUCKER | 5 | Transitional | Medium | Tolerant |

- **Segment 2: Mississippi River**

No surveys were conducted on the Mississippi River as part of this evaluation.

**Discussion and Designated Use Recommendations**

***Note: Recommendations from this site visit are shown at the top of this memo.***

Staff reviewed fisheries data collected from 2003- 2024 from Coon Creek, upstream and downstream of the facility. A Brown Trout population is clearly present throughout the system at all monitoring sites reviewed, from present day back two decades or farther. Segment 1 of Coon Creek is functionally a Class II trout stream with a low to medium density Brown Trout fishery and some natural reproduction (Kirk Olson, personal communication). Considering that Coon Creek has not been stocked with Brown Trout since 2014, the Brown Trout captured at the mouth of Coon Creek are likely the result of natural reproduction. Although there was a period of occasional historic Rainbow Trout stocking, this was discontinued in 2015 with no intention to stock Rainbow Trout in the future, and Rainbow Trout are no longer present (Table 7).

The natural community verifies as a Cold-Transition Mainstem, which is in the Coldwater Designated Use category. Because there is presence of Brown Trout but not Rainbow Trout, this falls into a Coldwater Category 5 for ammonia criteria and permit limits (under ch. NR 105.06, Table 2C, Wis. Adm. Code).

**Are code changes and/or a Use Attainability Analysis needed?**

No code changes or Use Attainability Analyses are needed. Coon Creek is not currently listed in the code as LAL or LFF, and should not be added.

**Attachments**

- Table 7: Rainbow Trout Stocking Records
- NC Verification Reports

Table 7. All records of Rainbow Trout stocking on mainstem Coon Creek (both Vernon and La Crosse Counties). Downloaded from the Fish Management Information System Stocking Database on 06/21/2024. Rainbow Trout stocking is now discontinued.

| Stocking Year | Stocked Waterbody Name | Species | Strain (Stock) | Age Class | Number Fish Stocked | Average Fish Length (in) |
|---|---|---|---|---|---|---|
| 2015 | COON CREEK | RAINBOW TROUT | DOMESTIC | ADULT | 150 | 12 |
| 1996 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 909 | 5.6 |
| 1995 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | YEARLING | 1500 | 8.9 |
| 1995 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | YEARLING | 1330 | 8.9 |
| 1995 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 1095 | 4.7 |
| 1994 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 1500 | 5.5 |
| 1993 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 1500 | 4.4 |
| 1993 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 1500 | 4.4 |
| 1992 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | YEARLING | 1570 | 9 |
| 1991 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 1500 | 5 |
| 1991 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | FINGERLING | 1500 | 5 |
| 1987 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | YEARLING | 1470 | 11 |
| 1987 | COON CREEK | RAINBOW TROUT | UNSPECIFIED | YEARLING | 9000 | 11 |

# Natural Community Verification Report

Waterbody Name (WBIC): COON CREEK (1643500)

Swims Station ID: 10010387 (Survey Site # 2 in this document)

Survey Sequence Number: 73868

This NC Verification Report was run on COON CREEK - COON CREEK REMAP 128-X, (10010387), located in VERNON County with fish Survey Sequence Number 73868 sampled on August 5, 2003. The Natural Community for this station was verified by Kuber on June 21, 2024.

The Natural Community was modeled *Warm Transition Mainstem* and is now Verified as *Cold Transition Mainstem* .

Survey location

Fish captured

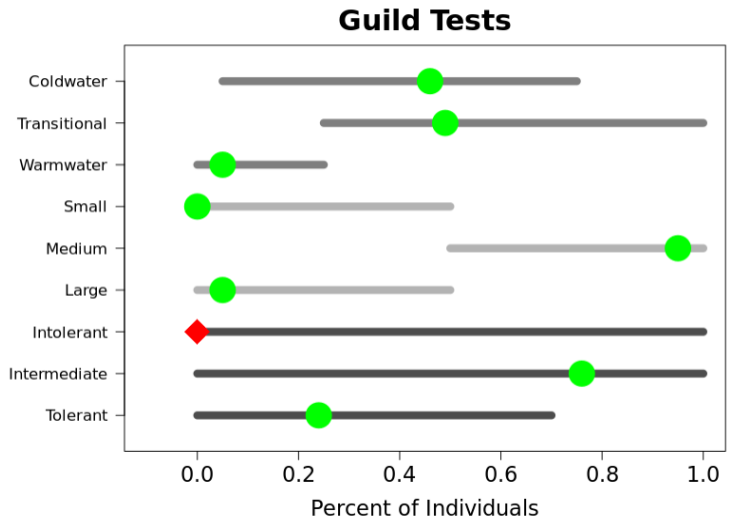
| Species | Count |
|---|---|
| BROWN TROUT | 19 |
| JOHNNY DARTER | 2 |
| LONGNOSE DACE | 8 |
| SHORTHEAD REDHORSE | 1 |
| SPOTFIN SHINER | 1 |
| WHITE SUCKER | 10 |

Guild percentages

| Thermal | Percent.Indiv. | Size | Percent.Indiv. | Tolerance | Percent.Indiv. |
|---|---|---|---|---|---|
| Coldwater | 46 | Small | 0 | Intolerant | 0 |
| Transitional | 49 | Medium | 95 | Intermediate | 76 |
| Warmwater | 5 | Large | 5 | Tolerant | 24 |

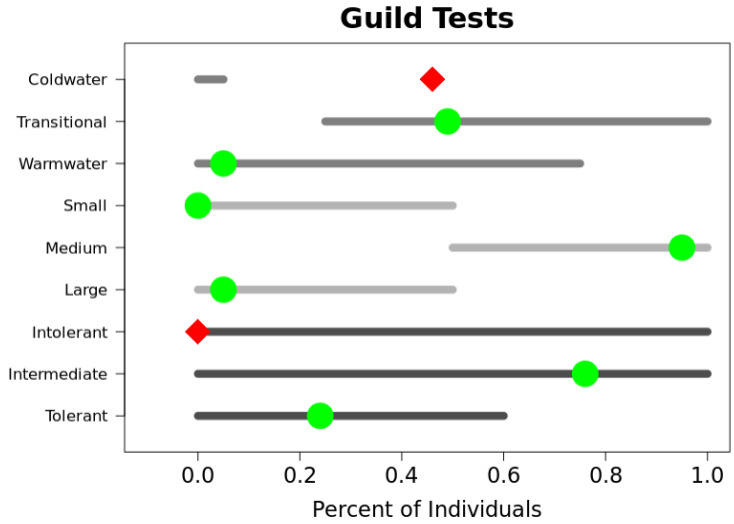
Cold Transition Mainstem

*If an NC is selected in this dropdown the figure will appear on your report as an NC considered, but not selected*




The warmwater guild test shown below was not selected as there were too many coldwater individuals present for it to fit as a warm transitional mainstem.

Warm Transition Mainstem




**Comments from WR Biologist:**

The most common fish species present are brown trout, a coldwater species. Transitional species like white sucker and longnose dace were also common. Only 2 warmwater species were present and only one individual of each was captured. This fish species assemblage is a better fit for a cold transition mainstem.

# Natural Community Verification Report

Waterbody Name (WBIC): COON CREEK (1643500)

Swims Station ID: 10010388 (Survey Site # 3 in this document)

Survey Sequence Number: 73869

This NC Verification Report was run on COON CREEK - COON CREEK REMAP 128-B, (10010388), located in VERNON County with fish Survey Sequence Number 73869 sampled on August 5, 2003. The Natural Community for this station was verified by Kuber on June 21, 2024.

The Natural Community was modeled *Warm Transition Mainstem* and is now Verified as *Cold Transition Mainstem* .

Survey location

Fish captured

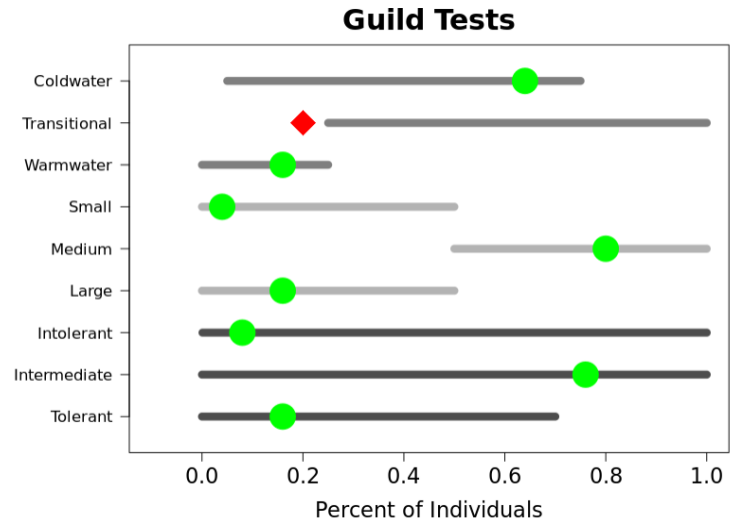
| Species | Count |
|---|---|
| BROWN TROUT | 16 |
| CREEK CHUB | 1 |
| JOHNNY DARTER | 1 |
| ROCK BASS | 1 |
| SHORTHEAD REDHORSE | 2 |
| SMALLMOUTH BASS | 1 |
| WHITE SUCKER | 3 |

Guild percentages

| Thermal | Percent.Indiv. | Size | Percent.Indiv. | Tolerance | Percent.Indiv. |
|---|---|---|---|---|---|
| Coldwater | 64 | Small | 4 | Intolerant | 8 |
| Transitional | 20 | Medium | 80 | Intermediate | 76 |
| Warmwater | 16 | Large | 16 | Tolerant | 16 |

Cold Transition Mainstem

*If an NC is selected in this dropdown the figure will appear on your report as an NC considered, but not selected*




The warmwater guild test shown below was not selected as there were too many coldwater individuals present for it to fit as a warm transitional mainstem.

Warm Transition Mainstem


**Comments from WR Biologist:**

The most common fish species present are brown trout, a coldwater species. Transitional species like white sucker, johnny darter, and creek chub were present. 3 warmwater species were present but few individuals of each were captured. This fish species assemblage is a better fit for a cold transition mainstem.